Alcatel-Lucent 1540 Litespan

A Multitude of Possibilities in One Multiservice Access Platform

Alcatel·Lucent

The Alcatel-Lucent 1540 Litespan family is a multi-service access network platform that offers cost-effective voice, data, high-speed Internet access (HSIA), and video (IPTV, VoD) services for residential and business subscribers. This multivendor-compatible solution lets you support multiple network topologies and transport options. As a member of the Alcatel-Lucent Litespan family, the integrated Alcatel-Lucent 1353 Litespan Management System (LMS) minimizes operational and maintenance expenses.

With the Alcatel-Lucent 1540 Litespan family, you can offer any mixture of revenue-generating services and can orchestrate the smooth evolution of your networks from traditional TDM to NGN, using the most economically advantageous strategy to meet your business objectives. The Alcatel-Lucent 1540 Litespan family integrates with other products to offer end-to-end solutions for the NGN.

The Changing Face of the Access Network

In addition to very popular Internet access services, new services such as video on demand (VoD) and Internet protocol TV (IPTV) are continuing to fuel the growing demand for converged voice and data networks. Your business and residential subscribers are demanding the delivery of a variety of advanced services quickly, cost-effectively and with uncompromising quality of service (QoS).

What you need is an access platform that lets you deliver quality voice services, minimize operational costs, and provide Internet access and video services when required. Multiservice access platforms let you transition the access network in order to leverage the existing voice access infrastructure to produce new revenue streams for broadband services at a minimum additional investment.

The Alcatel-Lucent Multiservice Access Network Solution

The Alcatel-Lucent 1540 Litespan family is a central element in Alcatel-Lucent's access networks product portfolio, serving as a multiservice access-based media gateway and offering:

- Support for any mix of services to rural or urban residential users, small offices/home offices (SOHOs), small/medium enterprises (SMEs) and large corporations
- Support for multiple access topologies (star, tree, point-to-point, ring, and mixed)
- Readiness for a smooth evolution to IP
- Support for a variety of technologies, including TDM, synchronous digital hierarchy (SDH), ATM, IP and Ethernet

OUTSTANDING MULTISERVICE ACCESS GATEWAY

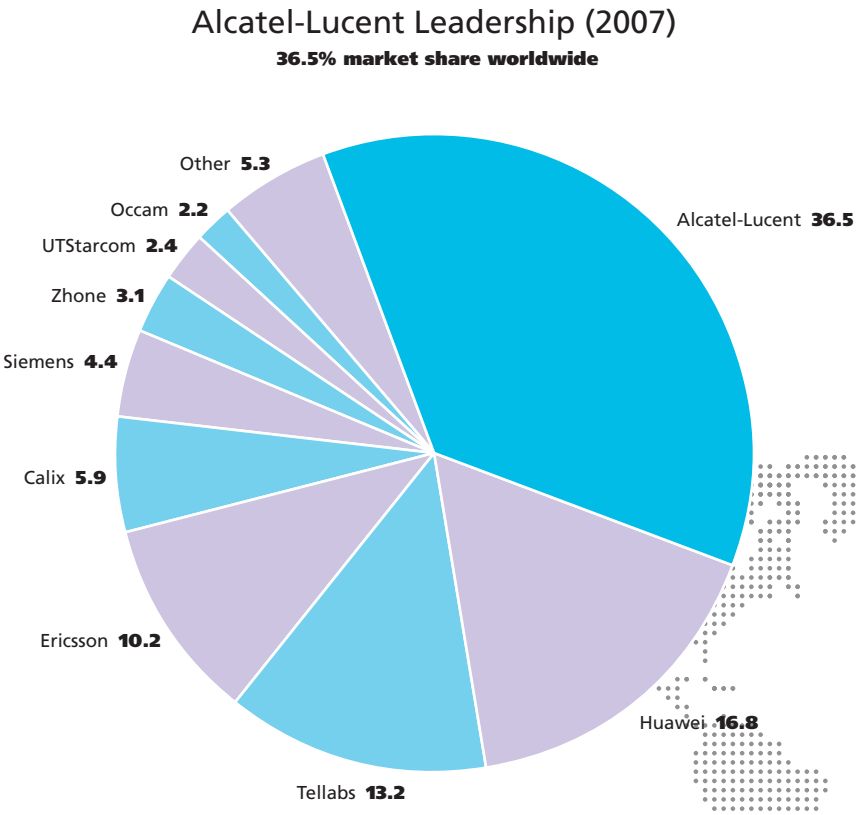
The Alcatel-Lucent 1540 Litespan family is based on an outstanding multiservice access gateway platform that offers a unified, flexible, integrated architecture for a wide variety of network implementations.

INTEGRATED MANAGEMENT

In addition to the multiservice gateway platform, the family includes the integrated Alcatel-Lucent 1353 Litespan Management System (LMS). Both the Alcatel-Lucent 1540 Litespan Multiservice Access Gateway (Alcatel-Lucent 1540 Litespan) and the Alcatel-Lucent 1353 LMS are integrated and tested with other Alcatel-Lucent products to ensure end-to-end NGN solutions.

Leading the Industry

The Alcatel-Lucent 1540 Litespan family has taken a leading position as an access network solution. A March 2007 study by The Windsor Oaks Group LLC reported that the Alcatel-Lucent solutions are leading the MSAP/DLC market (36.5 percent). As of March 2007, the Alcatel-Lucent 1540 family is being used by more than 70 service providers in 41 countries worldwide. More than 26 million equivalent lines have already been delivered — plain old telephone system (POTS), integrated services digital network (ISDN), leased lines and digital subscriber line (xDSL).



Taking Advantage of the Alcatel-Lucent 1540 Litespan Family

Multiservice Capabilities for Increased Revenue Generation

With the multiservice capabilities of the Alcatel-Lucent 1540 Litespan Family, you will be able to expand your revenue-generating opportunities. In addition to providing basic narrowband voice and data services (using POTS, ISDN, basic access/primary rate access, digital leased lines), the system delivers broadband Internet access, data transmission and video applications (such as VoD or IPTV) capabilities over digital subscriber lines (ADSL, ADSL2 or ADSL2plus) and global standard high bit rate DSL (G.SHDSL) to enable quicker business data services for business end users. Alcatel-Lucent's 1540 Litespan represents the perfect triple-play solution for many types of access network scenarios.

Support of Multiple Topologies for More Flexible Applications

Star, ring, tree, point-to-point and mixed topologies are all supported.

Support of Multiple Transport Options for Easy Integration with Existing Networks

The Alcatel-Lucent 1540 Litespan integrates plesiochronous digital hierarchy (PDH) or SDH transport mechanisms for switching and data networks. An SDH add-drop multiplexer (ADM) is integrated in just one board. Asynchronous transfer mode (ATM) and GigaEthernet transport capabilities are also in the system. Moreover, traffic can be transported between Litespan exchange units (EUs) and remote subtending units (RUs) through copper lines (using HDSL or g.SHDSL transport protocols), fiber connections or external leased-line networks.

Broadband (xDSL) traffic is routed through synchronous transport module 1 (STM-1) optical or E3/DS3 electrical interfaces to the ATM backbone, and through a GigaEthernet port (10/100/1000Base-T or optical 100/1000 FX) to the (typically) IP backbone. This increases your flexibility when connecting to the IP data backbone through Metro Ethernet networks.

Open Interfaces for Multivendor Compatibility, Competitive Pricing and Investment Protection

The Alcatel-Lucent 1540 Litespan family is designed with standard interfaces (V5 for TDM voice services, Megaco/H.248 for VoIP, and ATM or Ethernet for xDSL traffic) to ensure that it functions effectively in open environments. This open design lets you build competitive, customized solutions compatible with your existing investments and customers' needs.

Rapid Deployment for Faster Revenue Generation

With the Alcatel-Lucent 1540 Litespan family, your deployment is simplified because the indoor racks and outdoor cabinet configurations are delivered from the factory completely built and tested. You can also provision the system from a centralized management center or a local craft terminal. Moreover, the management system is consistent with established systems, minimizing the learning curve. In short, all of these features significantly shorten your time-to-revenue.

Lower CAPEX and OPEX and Increased Revenues

Because the Alcatel-Lucent 1540 Litespan family provides so many services on a single platform, it can significantly affect your overall revenues. Plus, its flexible design ensures you can easily add new services as user demand requires them.

Just as important, the Alcatel-Lucent 1540 Litespan significantly lowers your capital expenditure (CAPEX) and operating expenditure (OPEX) by:

- Starting fiber at the most economical point
- Using standard interfaces
- Interconnecting Ethernet, ATM, public switched telephone network (PSTN)/ISDN, leased lines, TDM, etc., in a single node
- Supporting flexible topologies in a single system
- Including open interfaces for multivendor interworking
- Providing integrated network management

Future-Ready and Safe Investment Evolution to NGN

The Alcatel-Lucent 1540 Litespan is designed to be NGN ready, letting you smoothly convert from a multiservice access platform supporting today's TDM services to a full access media gateway in NGNs. Through the simple insertion of a VoIP gateway card, you can transform the node into an NGN access gateway that supports VoIP services with minimal future investment. You can also choose which customers remain connected to the legacy TDM backbone and which migrate to the new NGN backbone.

Access Networks created with Alcatel-Lucent 1540 Litespan can be easily upgraded to deliver Triple Play solutions.

Significant Features – Significant Benefits

As a robust, scalable access platform, the Alcatel-Lucent 1540 Litespan supports voice, data and video services in any transport option. Table 1 summarizes the most important features and benefits of the Alcatel-Lucent 1540 Litespan.

Table 1. Alcatel-Lucent 1540 Litespan Features and Benefits

FEATURES	BENEFITS
POTS card integrates ringing and testing	The 32-port POTS board integrates the ringing and testing functionality previously provided by dedicated boards in the system. Integration frees up more slots for services. Together with the available configuration of four multiservice line shelves (MLSs) per indoor rack, this increases your system capacity to 2,556 POTS lines in a single rack. Litespan RUs can be subtended from SDH Litespan hubs through an external transport G.703 link.
GigaEthernet network interface	xDSL traffic can be redirected toward the backbone through a GigaEthernet port (1000Base-SX, 1000Base-LX, 1000Base-EX, 1000Base-ZX and 1000Base-TX). As a result, your flexibility is increased when connecting to the IP data backbone through metro Ethernet networks.
Voice controller and servers hot switchover	A more reliable architecture for the system's narrowband controllers is now available. Your subscribers' voice calls are not interrupted in case the controller fails while the spare is taking over.
MultiDSL (ADSL, ADSL2 and ADSL2plus)	Using different implementations of ADSL technology, the Alcatel-Lucent 1540 Litespan assures you a best-in-class operation for broadband services in copper loops.
Multiple virtual circuits (VCs) allocated per end-user	Using the Alcatel-Lucent 1540 ADSL boards, several virtual circuits can be established between the ADSL port and the end-user router. Each VC is devoted to a broadband service (HSIA, video, VoIP, etc.) assuring that no service can degrade the quality of any other.
IGMP (V3) proxy and snooping for multicast transmission of video streaming	The Alcatel-Lucent 1540 Litespan uses the IGMP proxy/snooping protocols, allowing a multicast transmission of IP and optimizing bandwidth resources while delivering IPTV.
Higher scalability and capacity of VoIP server card	The VoIP server card (VISC) offers up to 508 active calls. A system can include up to 4 VISCs for serving up to more than 4,000 subscribers. Media gateway functionality is provided for handling POTS, ISDN BA and ISDN PRA connections. An integrated announcement server and a multiparty conference system are also incorporated.
New Layer 2 and routing protocols and security features	The Alcatel-Lucent 1540 Litespan is protected against several types of external attacks such as hijacking sessions, distributed denial of service (DDOS), as well as food attacks. It incorporates the following protocols and security features, among others:
	Protocols • VLAN Q-in-Q • IEEE 802.3ad Ethernet link aggregation • PPPoA, PPPoE, PPPoE relay • RIP • OSPF • Spanning Tree (RSTP) • DHCP relay option 82
	Security • IP address anti-spoofing • MAC address anti-spoofing • MAC filtering • DHCP incoming message rate control • Broadcast storm control • L2/L3/L4 filtering • MAC flooding prevention • 802.1x authentication • AAA server and RADIUS client
Wire-speed architecture	The wire-speed architecture enables the bottleneck-free provisioning of high-bandwidth services, such as IPTV or VoD. This assures QoS by avoiding transmission delay and delivering the appropriate performance in the end-to-end system.

The Alcatel-Lucent 1353 Litespan Management System

As part of Alcatel-Lucent's comprehensive next-generation access portfolio, the Alcatel-Lucent 1353 Litespan Management System (LMS) manages the Alcatel-Lucent 1540 Litespan product family. This robust system provides network viewing, equipment configuration, service provisioning, alarm collection, remote inventory, testing and remote software upgrades of Alcatel-Lucent 1540 Litespan network elements. It also offers subscriber management for voice services.

For ease of service delivery on the Alcatel-Lucent 1540 Litespan platform, the Alcatel-Lucent 1353 LMS, includes several management applications:

- **Alcatel-Lucent 1353 Distributed Network (DN):** Element manager for voice and leased-line data services. The Alcatel-Lucent 1353 DN is based on the Alcatel-Lucent Management Platform (ALMAP). The use of common system management functions provides an integrated telecommunications management network (TMN) architecture, giving you a common look and feel across ALMAP-based applications.
- **1353 SDH Transport Network (NM):** Element manager for the optional integrated ADM (for SDH services)
  - ¬ Alcatel-Lucent 1353 Gateway (GW): Application layered on the Alcatel-Lucent 1353 DN and Alcatel-Lucent 1353 SH to interface with third-party operational support systems (OSSs)
- **Alcatel-Lucent 1355 DN:** Subscriber manager for voice services
  - ¬ Alcatel-Lucent 1355 GW: Gateway application layered on the Alcatel-Lucent 1355 DN to interface with third-party OSSs
- **Alcatel-Lucent 5523 ADSL Work Station (AWS):** Element manager for xDSL (broadband) services

Managing for Success

The modular Alcatel-Lucent 1353 Litespan Management System (LMS) incorporates several management modules, depending on the network topology and system management requirements. The capability to run network management applications from any server in the system reduces the number of servers required, lowering your CAPEX. The internal communications framework makes the Alcatel-Lucent 1353 LMS independent of some third-party applications, thereby reducing your software license costs. And, remote provisioning, upgrading and testing reduces truck rolls and lowers operating expenditures (OPEX).

Table 2. Key Features and Benefits of the Alcatel-Lucent 1353 LMS

FEATURE	DESCRIPTION
Narrowband and broadband applications in a single server	The Alcatel-Lucent 5523 AWS and 1353 DN applications can run on a single server, thus optimizing hardware investments, which are used to run the Alcatel-Lucent 1353 LMS for managing small networks.
Alcatel-Lucent 1353 LMS high availability	System availability is enhanced through N+1 server redundancy, which keeps the system resilient by having a stand-by server take control of applications running in the faulty server.
Common integrated desktop in Alcatel-Lucent 1353 LMS	Operators can run any network management application from any server in the system. This reduces the number of servers required to run all applications for the Alcatel-Lucent LMS. The net result is reduced investment in hardware.
Logical inventory	Using the logical inventory, operators can query specific access nodes about the type of subscriber, as well as the directory number, rack, subrack, and physical ports.
Outband and in-band interfaces for the DCN	The outband and in-band interfaces provide any kind of connectivity to the access nodes from the Alcatel-Lucent LMS, by using either outband or in-band connections — the same connections that are used for traffic payload.

The Alcatel-Lucent Advantage

The Alcatel-Lucent 1540 Litespan family is enhanced by Alcatel-Lucent's long-term leadership in:

- DSL and MSAP/DLC segments
- Voice switching
- Intelligent networks
- Terrestrial and submarine transmission

Furthermore, Alcatel-Lucent's expertise in applications and network services enables you to focus on optimizing your service offerings and revenue streams.

LEVERAGING ALCATEL-LUCENT'S ESTABLISHED POSITION

As part of the Alcatel-Lucent portfolio, the Alcatel-Lucent 1540 Litespan family enjoys a number of advantages. Alcatel-Lucent has a massive installed base of more than 314 million lines that can be leveraged with the Alcatel-Lucent 1540 Litespan. The Alcatel-Lucent 1540 Litespan incorporates technology from the Alcatel-Lucent DSLAM families, which represent the largest installed base of DSL worldwide. The Alcatel-Lucent 1540 Litespan also incorporates technology from the Alcatel-Lucent SDH transmission family of products, representing the largest installed base of SDH equipment in the world. Alcatel-Lucent also has the largest geographical coverage in the ETSI market, making it possible to provide turnkey solutions virtually everywhere in APAC and Europe and South regions.

In numerous deployments, the Alcatel-Lucent 1540 Litespan is already field proven, interworking with other products in the Alcatel-Lucent NGN portfolio and with the majority of switching vendors currently in the market.

NGN PRODUCT PORTFOLIO

The Alcatel-Lucent 1540 Litespan is part of the comprehensive Alcatel-Lucent portfolio that offers end-to-end solutions for NGNs.

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